Remarks

The Office Action dated 18 June 2002 has been received and reviewed. Claim 11 having been amended and claims 2, 22-27, and 29-35 having been cancelled, the pending claims are claims 1, 3, 6-21, and 28. Reconsideration and withdrawal of the rejections are respectfully requested.

Applicant notes that the Examiner has withdrawn the previous rejection under 35 U.S. C. 112 1st paragraph because of Applicant's arguments. However, on page 2 of the Office Action, the Examiner asserted that:

> "Due to the comments in the response received April 30, 2002 relative to the previous rejection under 35 U.S. C. 112 1st paragraph, applicant is prohibited from arguing that the alert is anything more than a change in the conductivity being noticed or the structure for generating an alert being more complex than structure that can convert the measurement into a value that is readable by an operator. Thus any device which displays the measurement inherently meets the claimed structure or step for generating an alert."

Applicant respectfully traverses this asserted result from the comments presented in their 30 April 2002 response. Applicant respectfully submits that in no way did the arguments presented in the 30 April 2002 response limit the interpretation of the specification and/or the claims of the present invention. The 30 April 2002 response simply provided an example showing the specification was not deficient in the description of structure for providing an alert. Applicant respectfully requests a retraction of the statement regarding the asserted prohibition of Applicant's arguments.

The 35 U.S.C. §112, Second Paragraph, Rejection

The Examiner rejected claims 22-27 and 29-35 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Applicant has cancelled claims 22-27 and 29-35 without prejudice, rendering a response to the rejection moot.

The 35 U.S.C. §102 Rejection

Claims 12, 15-17, and 19-20

The Examiner rejected pending claims 12, 15-17, and 19-20 under 35 U.S.C. §102 as being anticipated by GB 1,151,482 to Hacman (hereinafter "Hacman") or FR 1576658 to N.V. Philips (hereinafter "Philips"). Applicant respectfully traverses the rejections.

Claims 12 and 17

Applicant respectfully submit Hacman fails to anticipate the subject matter of claims 12 and 17 as Hacman fails to teach each and every element as set forth in the claims. For example, Hacman fails to teach, besides other things, a sensor for detecting a gas phase material comprising ruthenium that includes a detection surface that has a material on which the gas phase material comprising ruthenium preferentially deposits. In contrast, Hacman recites that "it has been known to measure continuously the electric resistance of a thin metal layer growing on a base during the vapor deposition and to interrupt the vapour deposition, when a certain resistance value of the layer is reached" (page 1, lines 65-70). Hacman, however, does not teach a detection surface that comprises a material on which the gas phase material comprising ruthenium preferentially deposits, as recited in claims 12 and 17.

In addition, Hacman fails to teach a detector measuring electrical conductivity between the first and second electrodes, where the detector generates an alert when an electrically conductive film comprising ruthenium forms on the detection surface between the first and second electrodes, as recited in claims 12 and 17. In contrast, Hacman recites "a method for surveying the temperature of the bases to be deposited upon from the vapour phase during the deposition of thin layers, which method allows a reliable determination of the moment, which is correct for beginning the vapour deposition after a preceding heating of the base" (page 1, lines 48-55). Hacman provides that "control devices may be used, which permit

vapour deposition only, when the resistance value of the base surveyed has dropped to a predetermined value" (page 2, lines 68-71). Hacman, however, fails to teach that the control devices are used during vapor deposition (e.g., "[m]easuring the electric resistance of layers deposited from the vapour phase is outside the scope of the present invention" page 2, lines 46-49). Thus, Hacman fails to teach generating an alert when an electrically conductive film comprising ruthenium forms on the detection surface between the first and second electrodes, as recited in claims 12 and 17.

With respect to Philips, Applicant respectfully submits Philips fails to anticipate the subject matter of claims 12 and 17 as Philips fails to teach each and every element as set forth in the claims. For example, Philips fails to teach, besides other things, a sensor for detecting a gas phase material comprising ruthenium that includes a detection surface that has a material on which the gas phase material comprising ruthenium preferentially deposits. In contrast, Philips recites that "metals suitable for application as sources to be oxidized are in order chromium, tantalum, molybdenum . . . [t]he alloys of nickel and chromium are particularly well suited, for example, nichrome" (page 4, lines 13-15). Philips, however, does not teach a detection surface that comprises a material on which the gas phase material comprising ruthenium preferentially deposits, as recited in claims 12 and 17.

In addition, Philips fails to teach a detector measuring electrical conductivity between the first and second electrodes, where the detector generates an alert when an electrically conductive film comprising ruthenium forms on the detection surface between the first and second electrodes, as recited in claims 12 and 17. In contrast, Philips recites "a control" that is "a glass plate on which electrodes are deposited by evaporation, which are used to measure . . . the resistance of the deposited metal layer and that of the oxide layer formed from the metal layer" (page 5, lines 29-31). Philips provides that "[t]he source providing the evaporated metal is place on the disk (2) and consists of a meandering nichrome filament (5)" (Page 6, lines 4-5). Philips, however, fails to teach that a detector generates an alert when an

electrically conductive film comprising ruthenium forms on the detection surface between the first and second electrodes, as recited in claims 12 and 17.

Claims 15-16 and 19-20

Applicant submits that claims 15-16 and 19-20, being dependent on independent claims 12 and 17, which are otherwise allowable for reasons set forth herein, are likewise allowable over the cited art.

Claims 32 and 34

The Examiner rejected claims 32 and 34 under 35 U.S.C. §102 as being anticipated by Hacman or Philips. Applicant has cancelled claims 32 and 34, rending a response to the rejection moot.

Reconsideration and withdrawal of the rejection of pending claims 12, 15-17, and 19-20 under 35 U.S.C. §102(b) as being anticipated by Hacman or Philips is, accordingly, respectfully requested.

Claims 12-14, 16-18, and 20

The Examiner rejected pending claims 12-14, 16-18, and 20 under 35 U.S.C. §102 as being anticipated by Tyutnev et al. ("Concerning the Radiation-Induced Surface Conductivity in Polymers", Phys. Stat. Sol. (A) 86, 709 (1984)). (hereinafter "Tyutnev"). Applicant respectfully traverses the rejections.

Claims 12 and 17

Applicant respectfully submits Tyutnev fails to anticipate the subject matter of claims 12 and 17 as Tyutnev fails to teach each and every element as set forth in the claims. For example, Tyutnev fails to teach, besides other things, a sensor for detecting a gas phase material

comprising ruthenium that includes a detection surface that has a material on which the gas phase material comprising ruthenium preferentially deposits. In contrast, Tyutnev has "conducted measurements of the radiation-induced surface conductivity using specially constructed samples" (page 714, first paragraph of "Experimental Results and Discussion" section). Tyutnev, however, does not teach a detection surface that comprises a material on which the gas phase material comprising ruthenium preferentially deposits, as recited in claims 12 and 17. In addition, Tyutnev fails to teach a detector measuring electrical conductivity between the first and second electrodes, where the detector generates an alert when an electrically conductive film comprising ruthenium forms on the detection surface between the first and second electrodes, as recited in claims 12 and 17.

Finally, Tyutnev fails to teach a sensor for detecting a gas phase material comprising ruthenium in an environment, where the sensor includes a heater capable of providing thermal energy to a detection surface, as recited in claim 17. Applicant is unable to find a heater capable of providing thermal energy to a detection surface taught in Tyutnev. As such, Tyutnev fails to anticipate the subject matter of claim 17.

Claims 13-14, 16, 18, and 20

Applicant submits that claims 13-14, 16, 18, and 20, being dependent on independent claims 12 and 17 that are otherwise allowable for reasons set forth herein, are likewise allowable over the cited art.

Claims 32-35

The Examiner rejected claims 32-35 under 35 U.S.C. §102 as being anticipated by Tyutnev. Applicant has cancelled claims 32-35, rending a response to the rejection moot.

Reconsideration and withdrawal of the rejection of claims 12-14, 16-18, and 20 under 35 U.S.C. §102(b) as being anticipated by Tyutnev is, accordingly, respectfully requested.

Rejections Under 35 U.S.C. §103(a)

Claims 1, 3, 6-21, and 28

The Examiner rejected pending claims 1, 3, 6-21, and 28 under 35 U.S.C. §103(a) as being unpatentable over Y. Koda et al. (Chem. Abstr. 1979, 90, abstrace 114382q., hereinafter "Koda") in view of Ohlsson et al. (J. Appl. Polym. Sci. 1990, 41, 1189-1196, hereinafter "Ohlsson") or Z. Yuan et al. (Chem. Mater. 1993, 5, 908-910, hereinafter "Yuan") and GB 1,151,482 to Hacman (hereinafter "Hacman"), FR 1576658 to N.V. Philips (hereinafter "Philips") or Tyutnev et al. (Phys. Stat. Sol. (A) 86, 709 (1984), hereinafter "Tyutnev"). Applicant respectfully traverses the rejections.

The Examiner asserts that "[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to use the device and methods of Hackman, N.V. PHILPS or Tyutnev to detect the ruthenium compounds of Koda because of the recognized conductivity of the deposited materials as taught by Ohlsson or Yuan and the ability to measure them conductometrically will remove the need for radioactive materials in the detection. Applicant respectfully traverses these assertions.

Claims 1, 6, 10, 12, and 17

Applicant respectfully submits that the cited documents fail to support a proper *prima facie* case of obviousness.

With respect to the Examiner's assertion that the claims are unpatentable over Koda in view of Hacman and Ohlsson or Yuan, Applicant respectfully submits that the cited documents fail to teach or suggest all the elements of claims 1, 6, 10, 12, and 17. For example, Koda, Hacman, Ohlssson, and Yuan fail to teach or suggest, besides other things, generating an alert based on the detection of an electrically conductive film of a gas phase material comprising ruthenium, as recited in claims 1, 6 and 10. In addition, Koda, Hacman, Ohlssson, and Yuan fail to teach or suggest a detector measuring electrical conductivity between the first and second electrodes, where the detector generates an alert when an electrically conductive film comprising

ruthenium forms on the detection surface between the first and second electrodes, as recited in claims 12 and 17.

In contrast, Koda provides that oxidized samples of ruthenium were captured on polyethylene film and detected using neutron activation, but fails to teach or suggest either a detector for measuring electrical conductivity between electrodes, or generating any type of an alert. Ohlsson states "staining with ruthenium tetraoxide confers sufficient electrical conductivity", but fails teach or suggest either a detector for measuring electrical conductivity between electrodes, or generating any type of an alert. Yuan measured the electrical conductivity of RuO_2 films, but fails teach or suggest generating any type of an alert. Finally, Hacman recites "a method for surveying the temperature of the bases to be deposited upon from the vapour phase during the deposition of thin layers, which method allows a reliable determination of the moment, which is correct for beginning the vapour deposition after a preceding heating of the base" (page 1, lines 48-55). Hacman provides that "control devices may be used, which permit vapour deposition only, when the resistance value of the base surveyed has dropped to a predetermined value" (page 2, lines 68-71). Hacman, however, fails to teach that the control devices are used during vapor deposition (e.g., "[m]easuring the electric resistance of layers deposited from the vapour phase is outside the scope of the present invention" page 2, lines 46-49). Thus, Hacman fails to teach either a detector for measuring electrical conductivity between electrodes, or generating an alert based on the detection of an electrically conductive film of a gas phase material comprising ruthenium, as recited in claims 1; 6, 10, 12 or 17.

In addition, Applicant respectfully submits that Koda in view of Hacman and Ohlsson or Yuan fail to provide some suggestion or motivation to modify the references or to combine reference teachings, as asserted by the Examiner. If the proposed modification or combination of the prior art would change the principle operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). Applicant respectfully submits that the proposed modification of Hacman would change its principle of operation.

Hacman provides that "[t]he invention has the object of providing a method for surveying the temperature of the basis to be deposited upon from the vapour phase during the deposition of thin layers" (page 1, lines 48-51), and that "[t]he method according the invention is characterised [*sic*] in that the attaining of the predetermined temperature and accordingly the earliest moment for beginning the vapour deposition is ascertained by measuring continuously the electrical insulation resistance of a base not yet deposited upon while being heated" (page 1, lines 58-64). However, Hacman states that "[w]hen vapour-depositing a layer, the resistance may change discontinuously when the layer material has a higher electric conductivity than the base . . . [and] [m]easuring the electric resistance of layers deposited from the vapour phase is outside the scope of the present invention" (page 2, lines 42-48). The Examiners proposed modification or combination would use the device of Hacman to detect the ruthenium compounds of Koda, which are asserted to be conductive based on Ohlsson or Yuan. However, the invention taught by Hacman is not intended to measure the electric resistance of layers deposited from the vapour phase (e.g., the resistance of vapor-deposited layers may change discontinuously when the layer material has a higher electric conductivity than the base and so measuring the electric resistance of layers deposited from the vapor phase is outside the scope of Hacman's invention). Thus, the suggested modification of Hacman would change the basic principle under which the device was designed to operate (e.g., surveying and attaining of the predetermined temperature of the base).

With respect to the Examiner's assertion that the claims are unpatentable over Koda in view of Philips and Ohlsson or Yuan, Applicant respectfully submits that the cited documents fail to teach or suggest all the elements of claims 1, 6, 10, 12, and 17. For example, Koda, Philips, Ohlssson, and Yuan fail to teach or suggest, besides other things, generating an alert based on the detection of an electrically conductive film of a gas phase material comprising ruthenium, as recited in claims 1, 6 and 10. In addition, Koda, Philips, Ohlssson, and Yuan fail to teach or suggest a detector measuring electrical conductivity between the first and second electrodes, where the detector generates an alert when an electrically conductive film comprising

ruthenium forms on the detection surface between the first and second electrodes, as recited in claims 12 and 17.

As discussed above, Koda and Ohlsson fail to teach or suggest either a detector for measuring electrical conductivity between electrodes, and Koda, Ohlsson and Yuan fail to teach or suggest generating any type of an alert when an electrically conductive film comprising ruthenium forms on the detection surface. In addition, Philips fails to teach or suggest a detector measuring electrical conductivity between the first and second electrodes, where the detector generates an alert when an electrically conductive film comprising ruthenium forms on the detection surface between the first and second electrodes. In contrast, Philips recites "a control" that is "a glass plate on which electrodes are deposited by evaporation, which are used to measure . . . the resistance of the deposited metal layer and that of the oxide layer formed from the metal layer" (page 5, lines 29-31). Philips, however, fails to teach or suggest that a detector generates an alert when an electrically conductive film comprising ruthenium forms on the detection surface between the first and second electrodes.

In addition, Applicant respectfully submits that Koda in view of Philips and Ohlsson or Yuan fail to provide some suggestion or motivation to modify the references or to combine reference teachings, as asserted by the Examiner. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Applicant respectfully submits that the cited documents fail to suggest the desirability of combining the documents, and therefore fail to provide some suggestion or motivation to modify or to combine the documents.

Philips provides "a method according to which a substrate . . . is equipped with a layer of metal which is then subjected to the influence of an oxidizing atmosphere and is mainly characterized by the fact that several metal layers are deposited in succession, each of which is oxidized separately and almost entirely" (page 3, lines 5-8). Philips recites that "metals suitable for application as sources to be oxidized are in order chromium, tantalum, molybdenum . . .[and] [t]he alloys of nickel and chromium are particularly well suited, for example, nichrome" (page 4,

lines 13-15). Koda provides that oxidized samples of ruthenium were captured on polyethylene film and detected using neutron activation. The cited documents, however, fail to suggest the desirability of depositing several layers of ruthenium oxide of Koda in succession on the substrate of Philips.

The Examiner has asserted that the device and method of Philips could be used to conductometrically measure oxidized samples of ruthenium of Koda so as to remove the need for radioactive materials in the detection. However, nothing in Koda suggests that the use of radioactive materials in the detection process is a problem that needs to be solved. To the contrary, neutron activation is recognized as being a highly sensitive elemental analysis technique. In some cases, neutron activation offers sensitivities on the order of parts per billion or better, which are superior to those attainable by other methods. Thus, one skilled in the art considering the use of nuclear activation for element detection would be very unlikely to consider replacing this highly sensitive detection technique with the control of Philips that requires that layers of deposited metal be deposited in order for a resistance value to be measured.

With respect to the Examiner's assertion that the claims are unpatentable over Koda in view of Tyutnev and Ohlsson or Yuan, Applicant respectfully submits that the cited documents fail to teach or suggest all the elements of claims 1, 6, 10, 12, and 17. For example, Koda, Tyutnev, Ohlssson, and Yuan fail to teach or suggest, besides other things, generating an alert based on the detection of an electrically conductive film of a gas phase material comprising ruthenium, as recited in claims 1, 6 and 10. In addition, Koda, Tyutnev, Ohlssson, and Yuan fail to teach or suggest a detector measuring electrical conductivity between the first and second electrodes, where the detector generates an alert when an electrically conductive film comprising ruthenium forms on the detection surface between the first and second electrodes, as recited in claims 12 and 17. Finally, Koda, Tyutnev, Ohlssson, and Yuan fail to teach or suggest a sensor for detecting a gas phase material comprising ruthenium in an environment, where the sensor includes a heater capable of providing thermal energy to a detection surface, as recited in claim

17.

As discussed above, Koda and Ohlsson fail to teach or suggest either a detector for measuring electrical conductivity between electrodes, and Koda, Ohlsson and Yuan fail to teach or suggest generating any type of an alert when an electrically conductive film comprising ruthenium forms on the detection surface. In addition, Tyutnev fails to teach or suggest a sensor for detecting a gas phase material comprising ruthenium that includes a detection surface that has a material on which the gas phase material comprising ruthenium preferentially deposits. In contrast, Tyutnev has "conducted measurements of the radiation-induced surface conductivity using specially constructed samples" (page 714, first paragraph of "Experimental Results and Discussion" section). Tyutnev, however, does not teach or suggest a detection surface that comprises a material on which the gas phase material comprising ruthenium preferentially deposits. In addition, Tyutnev fails to teach a detector measuring electrical conductivity between the first and second electrodes, where the detector generates an alert when an electrically conductive film comprising ruthenium forms on the detection surface between the first and second electrodes. Finally, Applicant is unable to find a heater capable of providing thermal energy to a detection surface taught in Tyutnev. As such, Tyutnev fails to anticipate the subject matter of claim 17.

In addition, Applicant respectfully submits that Koda in view of Tyutnev and Ohlsson or Yuan fail to provide some suggestion or motivation to modify the references or to combine reference teachings, as asserted by the Examiner. If the proposed modification or combination of the prior art would change the principle operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). Applicant respectfully submits that the proposed modification of Tyutnev with the ruthenium oxide of Koda would change Tyutnev's principle of operation.

Tyutnev attempts to "clarify the experimental as well as theoretical background concerning the radiation-induced surface conductivity" (page 710, first paragraph). The Examiner's proposed modification or combination would use the device of Tyutnev to detect the

ruthenium compounds of Koda, which are asserted to be conductive based on Ohlsson or Yuan. However, the principle interest of Tyutnev's paper is to better understand radiation-induced surface conductivity, and not the conductivity of metal layers deposited from a vapour phase. Thus, the suggested modification of Tyutnev would change the basic principle under which the device was designed to operate.

Based on the foregoing arguments, the Applicant respectfully submits the cited documents fail to support a *prima facie* case of obviousness for claims 1, 6, 10, 12 or 17.

Claims 3, 7-9, 11, 13-16, 18-21, and 28

Applicant submits that claims 3, 7-9, 11, 13-16, 18-21, and 28, being dependent on independent claims 1, 6, 10, 12 and 17 that are otherwise allowable for reasons set forth herein, are likewise allowable over the cited art.

Claims 2, 22–27 and 29-35

Applicant has cancelled claims 2, 22–27 and 29-35, rendering a response to the rejections moot.

Reconsideration and withdrawal of the rejection of claims 1, 3, 6-21, and 28 under 37 C.F.R. §103(a) as being unpatentable over Koda in view of Ohlsson or Yuan and Hacman, Philips or Tyutnev is respectfully requested.

Double Patenting Rejection

Pending claims 1, 3, 6-21, and 28 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-57 of U.S. Patent No. 09/652,634. As this rejection is provisional, Applicant will address the rejection should the cited claims publish in an issued U.S. patent.

Summary

It is respectfully submitted that the pending claims 1, 3, 6-21, and 28 are in condition for allowance and notification to that effect is respectfully requested. The Examiner is invited to contact Applicant's Representatives, at the below-listed telephone number, if it is believed that prosecution of this application may be assisted thereby.

Respectfully submitted for
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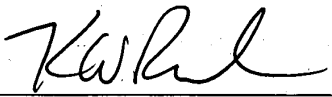
By: 

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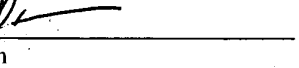
By: 
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